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# FLIGHT

First Aero Weekly in the World.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

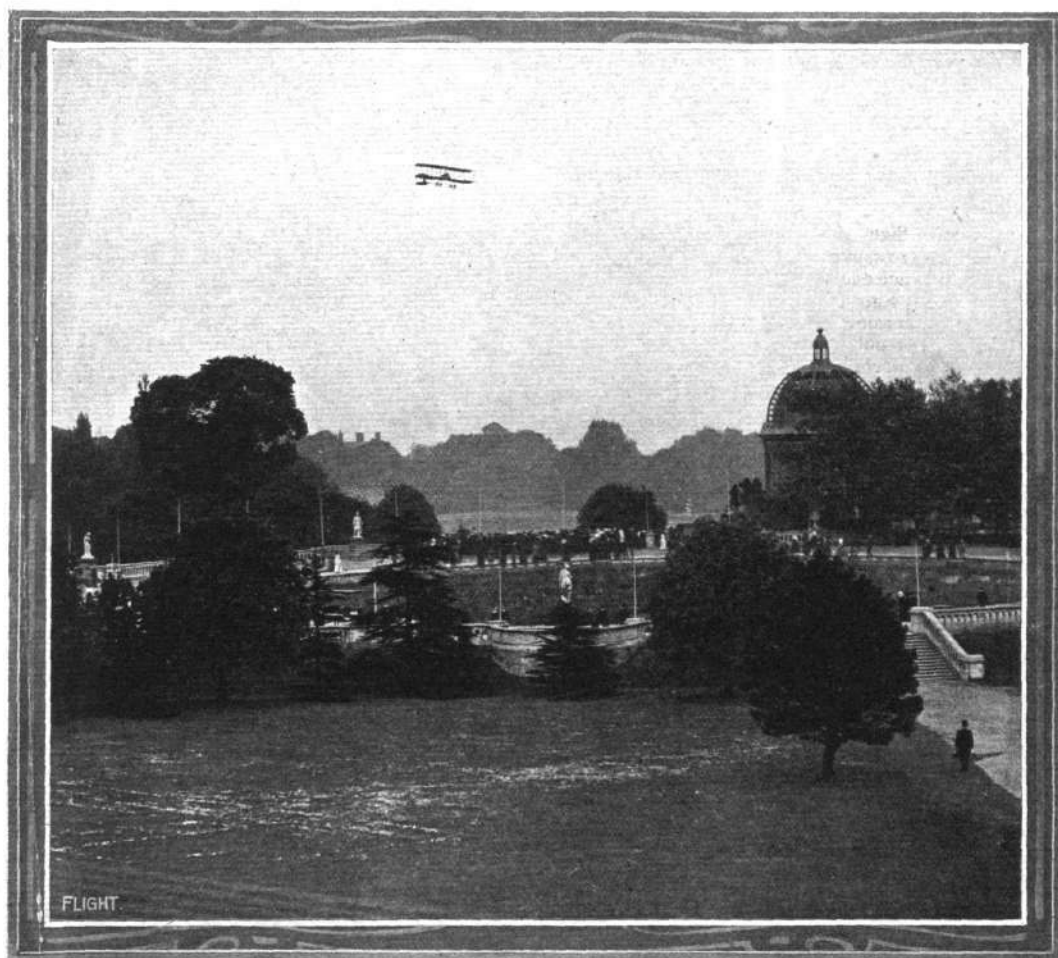
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Mr. Claude Grahame-White, on his Henry Farman biplane, giving exhibition flights over the Crystal Palace grounds last week.

## ACCIDENTS AND THEIR MORALS.

DURING the week just past there have been a few minor accidents to flying men when giving public demonstrations, and one or two which have been, unfortunately, of a serious nature. In spite of all these happenings, there is one reflection that occurs to the person who thinks intelligently upon the subject of flight, and that is how really safe a machine the aeroplane has become in comparison with what might have reasonably been anticipated concerning it at this early stage. It is, after all, a thing that is the birth of yesterday, and there are very few indeed who can be said as yet to have mastered thoroughly the first principles of practical flying. In hundreds of places, all over the world, experimental work is being carried on by men whose first thought is to succeed in practical flying, and who regard the incidental risks as something that is not worth while taking into account; and yet how seldom it is that we hear of fatal or even serious accidents happening to any of these pioneers. But accidents are bound to happen sometimes; and—without being callous—it may be affirmed that it is good they should happen, because it is by reason of them that we progress. As long as everything goes merrily, there is a tendency to think that nothing remains to be learnt; and things are all too likely to be taken for granted. Then presently the inevitable accident occurs to set people thinking why and wherefore, and to start them on the track of cause and effect in the endeavour to guard against similar happenings in the future. It is not only in the development of matters relating to human flight that this is so—it is the universal history of all progress, and must remain so always.

The accident which occurred at Eastchurch on Saturday last, in which Mr. Egerton was hurt, is far from being a case in point, inasmuch as he was not engaged in giving any kind of public demonstration, nor was there any of the overconfidence we have spoken of. It is nevertheless instructive, in that it appears to have been caused by his striking one of those extraordinary "air-pockets"—or, as we have heard them aptly described, "holes in the air"—that are apt to exist during certain states of the atmosphere. They are typical of one kind of danger that awaits the aviator, and it is difficult to think that any mechanical safeguard against the consequences of suddenly coming upon one of these peculiar "pockets" is likely to eventuate. They constitute, indeed, an inevitable danger of the kind that is inherent to all forms of locomotion and to many other things beside; and they need to be recognised by everyone taking part in the sport as speedily as is possible. Taking all the circumstances into account, Mr. Egerton was perhaps very fortunate to have got off as comparatively lightly as he did on this particular occasion, which happens to serve our purpose at the moment as showing that accidents may at any time occur to experienced airmen—let alone to comparative novices.

A very different sort of accident was that which occurred at Worcester, where a Blériot machine charged the spectators, injuring several and causing the death of a woman bystander. What appears to have happened was that Captain Clayton had arranged to give a series of spectacular flights at an Agricultural Show in the city, but owing to an injury sustained the day before, he was unable to carry out his undertaking. Sooner than disappoint the crowd, his assistant got the machine out and ran it along the ground; but it then got out of hand and

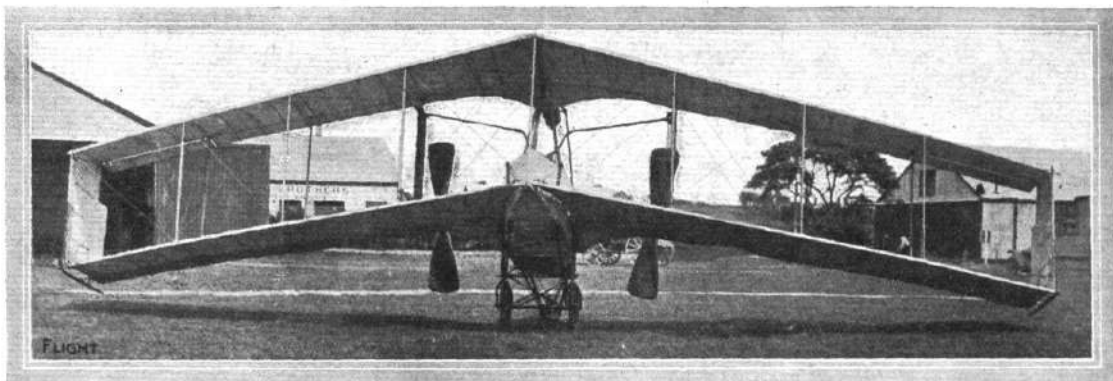
ran amok among the spectators, with the result stated. The spectators themselves do not appear to have been altogether blameless in the matter, for at the inquest which was held subsequently a County Council official who was present, said that the conduct of the crowd was foolhardy in the extreme. They insisted upon crowding around the aeroplane, and badly hampered the movements of the man who was in control, in spite of the efforts of police and officials to keep them back. That is as may be, and it possibly happens that in this case there was more than sufficient contributory negligence on the part of the spectators to acquit the would-be aviator of blame. But there is a serious moral to be drawn from this accident, no matter who was to blame for this particularly unfortunate incident in the Faithful City. It is becoming the fashion to consider any open-air function quite incomplete unless there is an exhibition of flying to give tone to it. With this we naturally have no quarrel—in fact, we think it is all to the good of the movement and is eminently calculated to catch and hold that public interest which our readers know we consider so entirely essential to the speedy development of flight. By all means let every town and every village and hamlet in the country have its own display of flying—the more the better—but the number of these displays and the number of pseudo aviators who are sure to hold themselves out as being able to give demonstrations is becoming so large that it is time something were seriously done to ensure that those who take in hand the conduct of the displays, and those who provide the practical demonstrations, shall be reasonably competent to carry out the duties they have assigned to themselves. In this we do not wish to be taken as making any reflections upon the competence of those concerned in the Worcester accident—we do not know anything of either Capt. Clayton or Mr. Dartigan. We simply draw the obvious moral from what has actually happened with a view to proper safeguards being adopted against the recurrence of so deplorable an incident—perhaps with even worse results.

Legislation is not at all necessary for dealing with the question of proper precautions at these small meetings. Aviation as a science is not ripe for legislation yet—enough is not known about it to risk having its development hampered by any laws that may prove foolish. But a good deal can be done without official interference. If the promoters of these affairs will take the trouble to find out whether the man who offers to come down and treat the crowd to an exhibition of flying is a competent aviator, they will have gone a long way towards securing the safety of their public. It should be a *sine qua non* that every aviator who gives a public performance where there is a large number of spectators present should hold an internationally recognised pilot certificate. To this extent we would even welcome the idea of official interference. So far the public Press has been singularly free from "scare" comments, even where serious and fatal accidents have happened. But a few more accidents like that at Worcester may make a lot of difference, and it behoves everyone concerned to see to it that every possible precaution is taken to guard against such occurrences in the future. And to achieve this, the first and most obvious thing to do is to insist that none but amply competent aviators be allowed to give these public exhibitions.

## THE DUNNE AEROPLANE.

ONE of the most important items recently chronicled in *FLIGHT* was that recording the achievement of Lieut. J. W. Dunne, who, at Eastchurch in the Isle of Sheppey, flew a distance of  $2\frac{1}{4}$  miles on a machine of his own design, which displayed so much natural stability as to render the use of the control levers totally unnecessary except so far as they were required for the purpose of directing the course. There is no doubt that this flight marks an important period in the development of the aeroplane, and although the outcome of it can only be

Lieutenant Dunne pursued his investigations of the problem of natural stability in the true spirit of science. He did not start with an idea and try to prove it; in fact, he has had very little time in which to evolve abstract theories that will fit in with the why and wherefore of every part of his machine. His is the sort of practice on which theory is founded. He set himself to observe. He made models and he watched them fly. He studied the works of others and he compared notes. As a result, he would tentatively adopt some general idea,



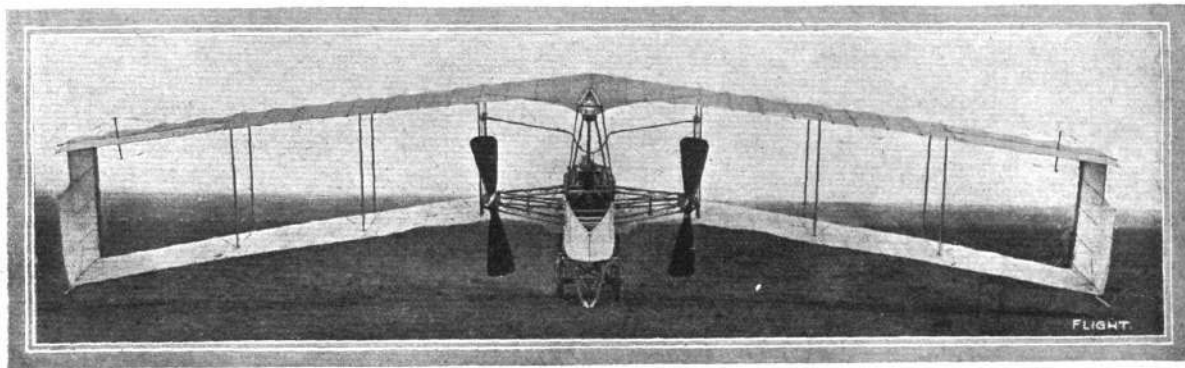
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The Dunne Biplane. View from in front, showing the machine in its natural position on the ground. The perspective caused by the slope back of the wings gives an erroneous impression in this view that the planes are greatly arched.

vaguely surmised, this in no way detracts from its present importance, and should increase, rather than otherwise, the amount of interest in the machine itself.

When a man pursues a line of thought for nine years and proceeds to evolve a system of construction from data collected in ceaseless experiment; when, having

such as, for instance, that in any stable flying machine, of which the main supporting surfaces are cambered aerofoils, the correct overall fore and aft length is very largely dependent upon that of the span. It is for this reason, among others, that the wings of the Dunne aeroplane slope backwards from the body to the extremi-



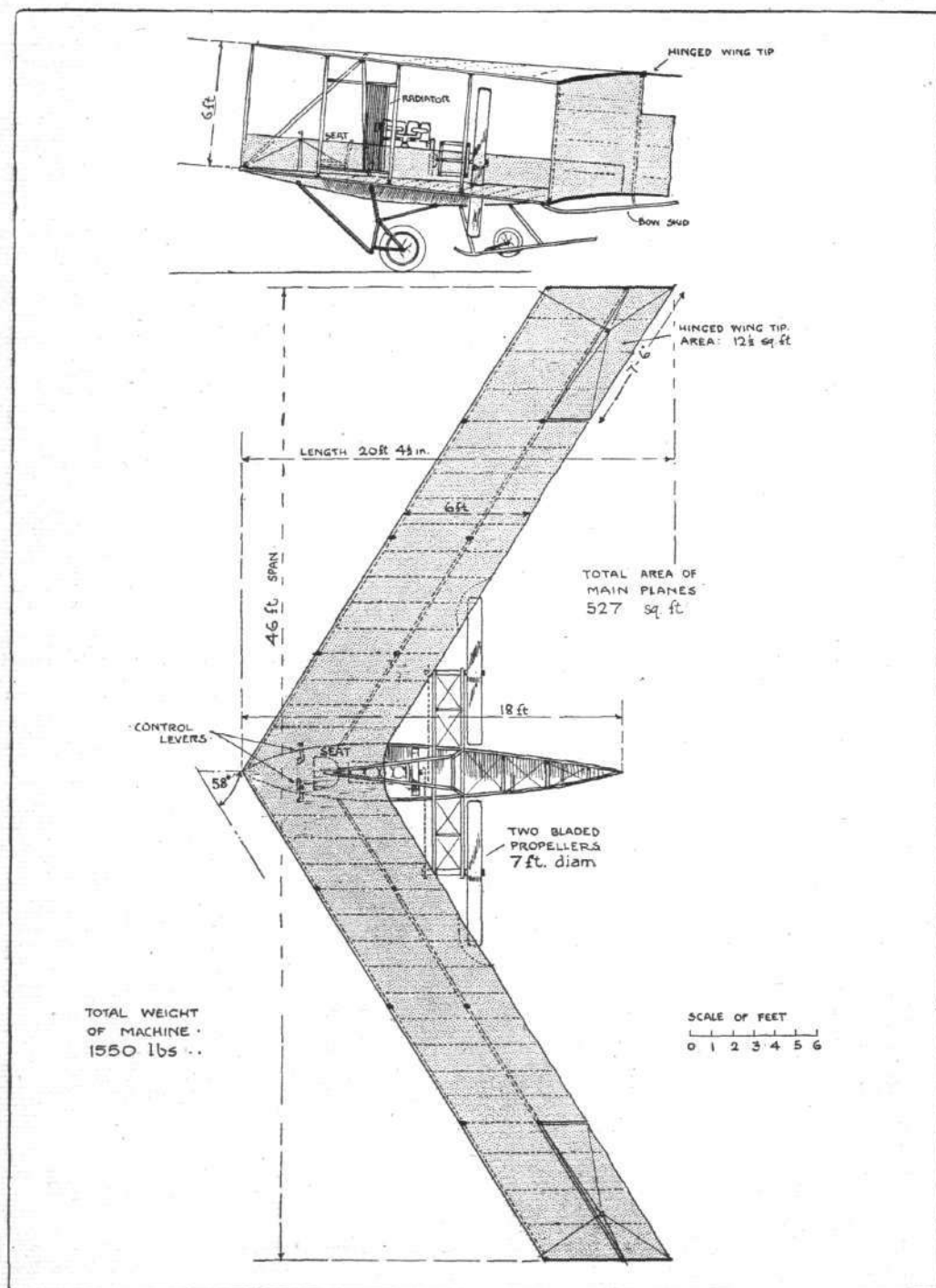
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Another view of the Dunne aeroplane taken from behind. In this photograph the rear wheel is resting on the ground. The supplementary camber that is given to the central portion of the trailing edge is very noticeable in this view.

built not the first, nor the second, nor third, not even the fourth, but the fifth machine, the inventor thereof flies at the first attempt under conditions that vindicated, at least so far as was possible on that occasion, the accuracy of his deductions, it is something for him to be proud of, and something for his country to be proud of, too.

ties. The machine has no tail, as ordinarily understood, but it has a very considerable fore and aft length beyond that represented by the mere chord of the supporting surfaces.

Another general principle that he was forced to adopt, as a result of his own experiments and those of others,



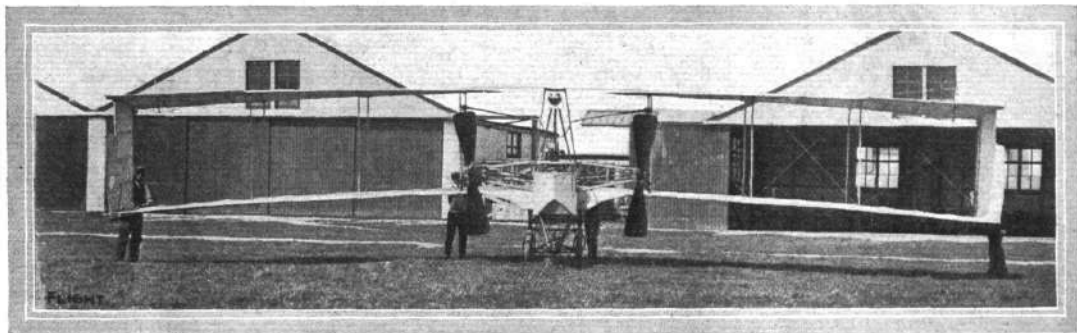
The 1910 Dunne biplane, "D5." Plan and side elevation.

"Flight" Copyright]



was that the tail plane and the main planes of a naturally stable aeroplane should make a dihedral angle with one another. Now, there is no tail plane on the Dunne machine, but the wings themselves are twisted so that the angle of incidence at the tips is less than at the centre,

reason for two of the outstanding features of the Dunne aeroplane, for it rather suggests that those features were tried in their present form from the first, whereas, on the contrary, the general lines as well as details are the result of gradual development.

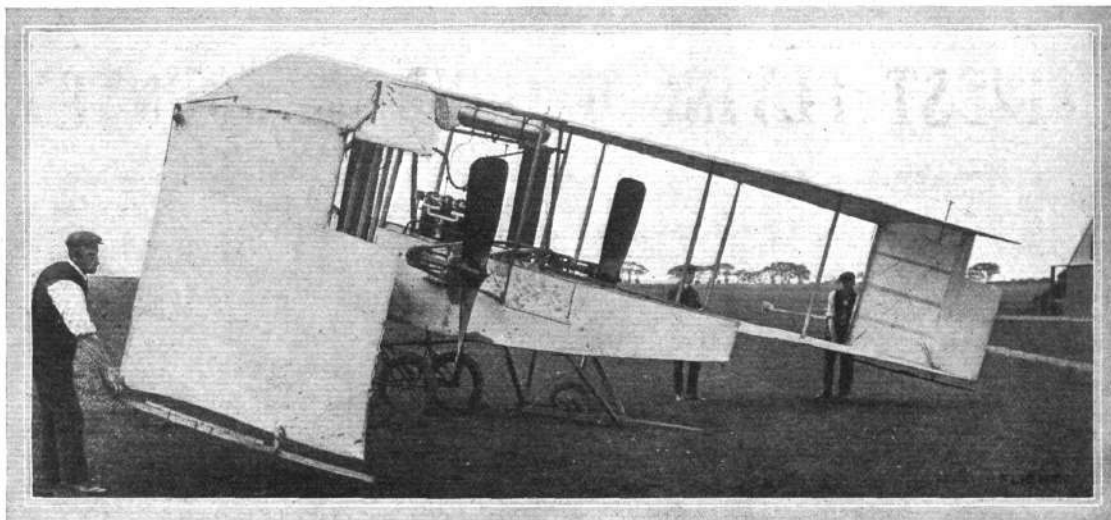


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View of the Dunne biplane taken from behind. In this view the trailing wheel has been raised to bring the machine into its flying position. The twist of the decks and the diverging gap are quite noticeable in this view.

wherefore the principle of the dihedral angle is, as will be seen, adhered to, although the form of it is so extraordinary as to suggest, at first sight, that there is no such comparison. As for the why and wherefore of innumerable other points of interest it would be almost impossible for anyone, even the inventor himself, to say; they have just been arrived at by a long painstaking series of trials, such as

It has been necessary thus to introduce the subject at some length in order to emphasise the point of view from which the Dunne aeroplane is most properly regarded, for in a mere description of the machine itself it is impossible to adequately imply the sort of appreciation that ought to be given to a design that is evolved in this fashion.



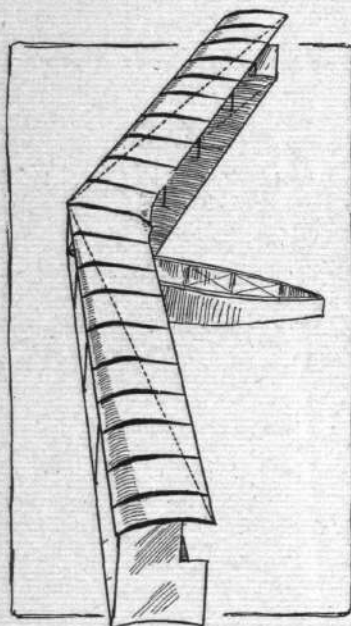
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Three-quarter view of the Dunne aeroplane from behind. This is the best general view of the machine that it was possible to obtain, since it alone gives the correct impression of the slope back of the main planes. The twist of the surfaces caused by their peculiar camber is very noticeable in the right-hand upper deck, which also indicates the diverging gap.

are within the means of anyone to carry out, but conducted always in an atmosphere of strictly scientific observation. There is a reason for everything on this machine, but the reasons themselves have been evolved step by step with the design; they are not mere ideas, but careful deductions based on past experience. It was perhaps a little unfair to offer such a simple explanation of the

The Dunne aeroplane is a biplane, and was constructed by Short Brothers at Shellbeach to the designs of Lieut. J. W. Dunne, who is responsible for all the calculations concerned therewith, while Short Bros. themselves were given a free hand in the choice of material and fittings. As far as the actual construction itself is concerned, therefore, it is not necessary to

say much in detail, for the machine is a typical example of the substantial and high-class workmanship with which that firm have already made a name,



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Diagrammatic sketch illustrating the varying curvature of the ribs in the wings of the Dunne biplane. The dotted line represents the line of contact with the imaginary cone upon which the wings are drawn out. Aft of this line the wing surfaces are flat.

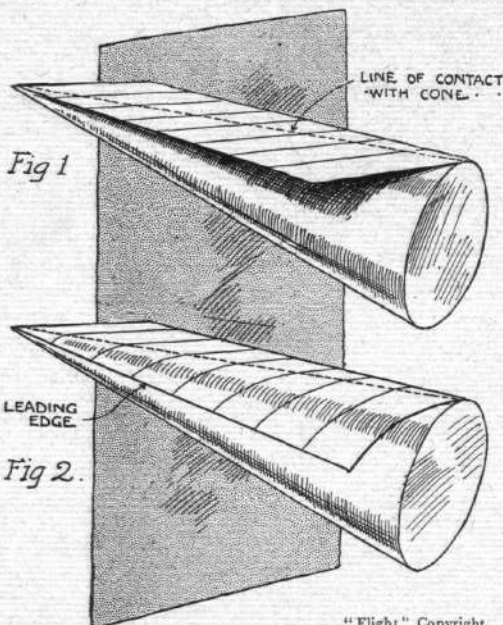
planes sloping sharply backwards from the centre where they join the body. Their extremities lie a little behind the rear end of the body, and thus the wings themselves constitute the greatest fore and aft dimension as well as the greatest span. The leading edge of each wing is straight, but the gap narrows a little along the leading edge towards the extremities, so as to give an expanding passage to the air. This is another of those details that have been evolved from experiment, and for which the precise reason, from an aerodynamic standpoint, is not at present clear.

The main planes are cambered in a very peculiar way, for the camber varies at every point from the centre to the tips. In order to understand what this camber is like, the only accurate procedure is to construct a simple paper model, which may be done in the following manner. In the first place, cut a strip of paper to represent one of the wings, then roll another sheet of paper into a cone after the fashion of a foolscap. The piece of paper that is cut to represent one of the wings must be a rhomboid instead of a rectangle in order to

allow for the slope back when one of the short edges is joined to the side of the body of the machine. Taking this strip of paper, it is laid on the cone so that its longest diameter is in contact with the surface of the cone from the apex to the base. The corner of the paper should coincide with the apex of the cone. The short edge of the sheet of the paper representing the wing, which is adjacent to the base, is then bent down to touch the surface of the cone, while the short edge adjoining the apex is allowed to stick out tangentially

although there is no doubt that the weight could be considerably reduced in the commercial manufacture of duplicates, such robustness is by no means to be despised in an experimental apparatus even if the desired characteristic of the machine itself does happen to be complete natural stability.

The outstanding feature of the Dunne biplane is the arrangement of the main planes, V fashion, as viewed from above. In plan the machine is like an arrow head, the main



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Sketch illustrating the use of a paper model in order to explain the shape of the wings on the Dunne aeroplane.

behind. Thus arranged, the sheet of paper represents one of the wings of the Dunne aeroplane, only the camber will, of course, be much exaggerated owing to the scale on which such a paper model would probably be constructed. It will be observed that the initial contact line with the cone runs diagonally from the leading edge where the wing joins the body to the trailing edge at the outer extremity. Near the body, therefore, the wings of the Dunne aeroplane are not much curved, whereas near the extremities they are curved for the greater part of the chord. At first sight this will suggest that the extremities are much more cambered than any other part of the wings, but it must be remembered that the radius of the curvature also increases towards the wing tip, for the centre from which it is struck lies on the axis of a cone, and not on that of a cylinder. If, therefore, less of the rib is actually curved in the vicinity of the body, that part which is curved has a more abrupt and consequently relatively greater deflection.

(To be concluded.)

## Another Aeronautical Classic.

"THE ART OF FLYING," by Thomas Walker, first published exactly a century ago, is to be issued immediately in the series of "Aeronautical Classics" edited by T. O'B. Hubbard and J. H.

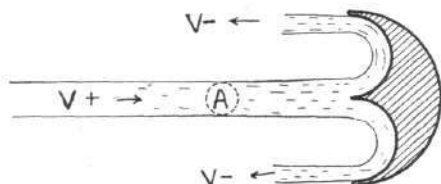


Ledeboer for the Aeronautical Society of Great Britain. The present reprint will include an introductory preface, all the original illustrations, while the additional matter appearing in the 1831 edition will be reprinted here for the first time.

## HOW AN AEROPLANE LIFTS.

(Concluded from page 446.)

Now at the very outset it is a purely arbitrary assumption to say that the plane brings the air-stream to rest in the manner stated. If the air is composed of molecules of matter, why should they not bounce off on striking the plane? To suppose that they do bounce off is just as reasonable as to suppose that they are brought abso-



PELTON BUCKET

$$\begin{aligned}
 A &= \text{AREA OF JET} & V+ &= \text{VEL OF IMPACT } \frac{F}{\text{sec}} = V \\
 V- &= \text{VEL OF DISCHARGE} = V & \rho &= \text{DENSITY} \\
 \text{MASS/SEC} &= \rho AV, \text{ CHANGE OF VEL} = \{V - (-V)\} = +2V \\
 \text{CHANGE OF MOMENTUM} &= 2\rho AV^2 \\
 \text{PRESSURE LBS (for AIR)} &= \frac{2\rho}{g} AV^2 = \frac{AV^2}{210} = \left\{ \frac{AV^2}{50} \text{ (for Vmph)} \right\}
 \end{aligned}$$

Fig 9.

lutely to rest, but the resultant formula for pressure would be very different; in fact, if the velocity with which they rebounded were the same as that with which they struck—as it would be under conditions of perfect elasticity—the resultant pressure would be twice as great as that given by the above formula. This principle is put into practical application in the Pelton water-wheel (Fig. 9), where the buckets are so shaped that the stream is reversed on impact.

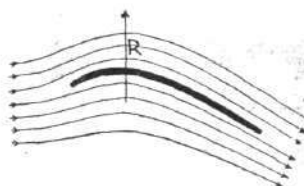
It is evident in the first place, therefore, that the flat plane is not the most efficient sort of obstruction considered from the point of view of receiving maximum wind pressure; in fact even the formula first mentioned, which only supposes that the air is brought to rest, is well known to give results about 50 per cent. higher than its true value. The reason for this is because the air when it strikes the normal plate is not actually brought to rest except possibly at the very centre of the stream, the remainder spews out over the edges and is carried on again by the main current in a manner which we have already had occasion to describe in another article. While this fact explains in what respect the hypothesis of the theoretical air-pressure formula is inadequate in practice, it does not directly suggest any reason to suppose that an inclined aeroplane should be more efficient in respect to air pressure than a normal plate. As a matter of fact, the inclined flat plane at small angles of incidence is only subjected to a fraction of the pressure experienced by the normal plane.

The real point containing the solution to Mr. Hickman's question lies in the fact that all practical aeroplane flyers and gliders have cambered sections, instead of being perfectly flat. The advantages of the cambered section have long been appreciated, and were well known to Lilienthal, Pilcher, and other early pioneers, who were more or less successful with practical machines. The cambered section is, moreover, a distinctive feature of a bird's wing, and in this connection it may not be without

value to abstract the following information relating to the subject from a chapter of Mr. F. W. Lanchester's "Aerodynamics":—

"One of the most remarkable, and it may almost be said unexpected peculiarities of wing form, is the dipping front edge or arched section. This is a characteristic in the wing form of all birds capable of sustained flight, but it is only within comparatively the last few years that this feature has been the subject of observation. It is scarcely credible that so marked a peculiarity should have escaped observation for centuries, but it would seem that such is the case. Historically, so far as the author has been able to ascertain, the credit of the discovery of the dipping edge is due to Horatio Frederick Phillips, whose publication is to be found in the specification of patent 13768 of 1884. The discovery appears to have been made as a matter of practical experience, and, as often takes place under these circumstances, the theory given by the inventor in his specification is erroneous. The advantages of the arched form of wing section were known to the late Herr Lilienthal at the time of his experiments in flight, 1890-94, and the discovery has been attributed to him by some writers. About the same time as Lilienthal was at work, the author succeeded in evolving the arched form or dipping front edge purely from theoretical considerations, at that time having no knowledge of the previous work of Phillips, or of the experiments then being conducted by Lilienthal."

The theory which Mr. Lanchester associates with the advantages of the cambered section is based on the



NEWTON'S THIRD LAW  
(Cambered Aerofoil)  
Lift R = Force = Weight W

Fig 10.

spewing action of the air when striking a flat plate. This spewing action constitutes a kind of cyclic disturbance around the edge of the plate, and that disturbance which occurs round the leading edge being superimposed upon the horizontal motion of flight or horizontal wind as the case may be, produces a resultant relative wind with an upward trend. In order to take advantage of this relative direction the leading edge of the aeroplane is dipped downwards, and in order to avoid the sharp corner which would thus occur at the junction between the fore and aft parts of the bent aeroplane, the very natural result is a cambered section, which is suitably designed to receive the air and change its momentum without shock. Dealing with the air in this manner (Fig. 10) is somewhat analogous to dealing with a water jet by means of a bucket of a Pelton water-wheel, at any rate the lift efficiency is very materially enhanced thereby, apart from other advantages which are of equal importance.

From what has now been said it should be fairly clear that the relationship between the cambered aerofoil of practice and the normal plane is not altogether as simple as it appears at first sight, and that there is no reason why the actual reaction on the decks of a well-designed



flyer or glider may not be in excess of that actually experienced on a normal plane. The question of calculating the lift of an aerofoil directly from the fundamental Newtonian formula, is one which depends solely on the possibility of accurately stating the hypothesis. It is not known definitely to what depth a cambered aerofoil will disturb a stratum of air. In practice multiple-decked flyers and gliders are commonly made with a gap between the decks equal to the chord, and on this basis it might be supposed that the sweep of an aerofoil, that is to say the depth of the stratum deflected, is also equal to the chord. Unfortunately for simplicity, however, this assumption does not give results which agree with actual values, but whatever the sweep may be it would, if exactly defined, provide the missing link required to complete the calculation, for knowing the effective area of the stream, it would be possible to define the mass of air deflected per second. The rate change of velocity which determines the change of momentum would be dependent on the camber and angles of the plane. Up to the present time, however, there is, as we have said, insufficient practical data to enable these functions to be determined with sufficient accuracy, although some preliminary work in this direction has already been done by Mr. F. W. Lanchester, who has compiled a table of lifts on this basis.\*

While upon this subject of the sweep of an aerofoil, it will be appropriate to draw attention to the importance of bearing in mind that the air above, as well as beneath, the deck, plays a part in the resultant lift. That this is so can be demonstrated by a very simple little experiment, for which the apparatus required is no more than a piece of cardboard fitted with a flap of paper over-

lapping one end. This paper flap is then curled so that it has a cambered section, as shown in the accompanying sketch (Fig. 11). The cambering of the paper may be very easily performed by pulling the sheet under the edge of a ruler which is lightly pressed upon it. If the opposite end of the cardboard to that which has paper fastened upon it is now placed to the mouth so that a stream of air can be gently blown along the top of the cardboard, as if to blow the paper down, it will be found that the paper flap rises so long as the draught continues.

It is very easy in this experiment to make quite sure of avoiding any under-current which can directly account for the phenomenon, and anyone can very readily satisfy

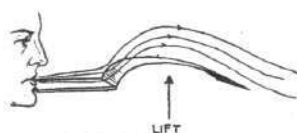


Fig. 11

themselves that the lift which the cambered aerofoil exhibits is in this case solely due to the passage of an air-current across its upper surface.

The exact causes which produce the effect demonstrated by the above experiment are doubtless open to argument, for the suggestion that the lift is due to the tendency which the air, glancing off at a tangent, has to create a partial vacuum, is one which satisfies the case equally well with a statement to the effect that the air tends to adhere to the cambered surface and to be swept downwards in consequence, whereby it would produce an upward reaction. Both explanations are partially correct, for so long as the paper can move there will be no actual vacuum formed, and in any case the nature of the force acting on the upper surface must be initially brought about by a suction effect.

\* FLIGHT, Vol. I., p. 297.

## FLIGHT IN AMERICA.

MR. FREDERICK R. SIMMS, who is at present in the United States in connection with the formation of a large manufacturing company for the construction of the British Simms magnetos in the United States of America for automobiles, marine engines and aero motors, has sent us the following interesting views upon the progress and future of flight:—

"Generally speaking, flying is making very steady, almost rapid, progress in this vast country, and the same as this country is at present the largest for the production and consumption of motor cars (for 1910 over 200,000), it will, in my opinion, in time to come (when the time is ripe) be the biggest country for flying, both for aeroplanes (one to five people) and motor balloons (five to one hundred people).

"Roads are being built rapidly for motor cars throughout the country, and I regard this as the first step toward flying, for the motorist of to-day will be the aviator of to-morrow.

"The splendid feats of Paulhan and Grahame-White, in connection with the London to Manchester flight, and the magnificent performance of the Hon. C. S. Rolls in the Dover-Calais-Dover flight, have certainly stirred the imagination and spirit of the Americans; and this, followed closely by the splendid performance of Glenn H. Curtiss in his fast and daring flight from Albany, *via* Poughkeepsie, to New York, landing on Governor's Island, is doing much to bring flying forcibly before the public, and induce many to join the ever-increasing ranks of the aviator. By the way, the fast time (56 miles per hour) made by Curtiss on his biplane is more a feature of his machine than a special achievement, and it is a comparatively small, very light-built and powerful machine.

"The Wright Brothers are doing well at their new flying school, and are constantly making new disciples. In fact, the step which they have taken is, in my opinion, just the right one, for all that 'flying' requires now is that many people are at it and learning it. Although there are yet a great many details to be altered and improved upon, it may fairly be stated that on the whole the modern flying machine is right upon us. It requires now learning and mastering. It must, however, be regretted that the Wright Brothers are trying to set up a monopoly for their flying machines, which,

unfortunately, is the fashion in this country. I am of opinion they would be far better advised to throw their untried patent open, and charge a moderate royalty which nobody would mind, and which would pay them far better in the end, and by doing so they would naturally aid a new and promising industry, perhaps the biggest that this world ever saw.

"There are here already a fair number of good flying men amongst whom I would like to mention Capt. Thomas, Scott Baldwin, and Mr. Charles R. Hamilton, all of whom are keen to compete for the new \$25,000 prize from New York to Chicago, a distance of about 1,000 miles, to be accomplished in ten stops. I sincerely trust there will be more and first-class aviators at home, for if England wants to hold her own against other nations this is an absolute necessity. There is one thing, however, which I believe we handle better at home, and that is the matter of institutions governing any new thing or movement. This applies equally to the motor car as well as aero clubs and institutions, for there seems to be no central organisation in this country which is the real central authority, and commands that respect, power and influence which the corresponding English institutions invariably have. It may be that, owing to the smallness of England, it is easier to bring all interested parties into touch and under one roof, but it is also certain that in this vast country there is a continual tribal strife amongst the various institutions, and in a sense again in a larger way amongst the various States. It may be due to the American motto 'Everybody for himself,' thus making the United States more a conglomeration of States than a federation. On the other hand, 'Imperial' ideas for the purification and unification of this wonderful country are certainly gaining daily more ground, and there is every possibility that the advent of the modern flying machine, which knows no border, is destined to play a great part in the development of this great country.

"Needless to say, that when the team of our English aviators come over here in the autumn to compete for the various international prizes, nothing will give me greater pleasure than to give them every assistance, which may be of good service, since our company have a staff of first-class engineers at their disposal."



# The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

## Presentation to the Hon. C. S. Rolls.

A LITTLE ceremony will take place at the Royal Aero Club on Tuesday next, the 21st inst., at 5 o'clock, to toast the Hon. C. S. Rolls and present him with the cup given by Messrs. Ruinat Père et Fils and also the Gold Medal of the Royal Aero Club. It was hoped that M. Jacques de Lesseps would be present to receive the cup presented to him by the Proprietors of the *Daily Mail*, but he has cabled his regrets at not being able to attend on account of his immediate departure for Canada.

It is hoped that members will assemble in strength to assist in the presentation.

## Committee Meeting.

A meeting of the Committee was held on Tuesday, the 14th inst., when there were present:—Mr. R. W. Wallace, K.C., in the chair, Mr. Griffith Brewer, Mr. Ernest C. Bucknall, Mr. John Dunville, Prof. A. K. Huntington, Mr. C. F. Pollock, Hon. C. S. Rolls, Mr. J. Lyons Sampson, Mr. Stanley Spooner, and Harold E. Perrin, secretary.

## New Members.—The following new members were elected:—

William Robert de la Cour	Allan McOnie, of Ballochneek.
Beamish.	Mrs. Ethel M. Sryan.
Sherard Osborn Cowper-Coles.	Norman Arthur Thompson.
Erskine Alick Crossley.	Harold Topham.
J. Armstrong Drexel.	W. Charles Whittham.
Frederick Montagu James Gibbs.	

**Aviators' Certificates.**—The following resolution was passed:—“Aviators taking part in any competition or trial must possess an aviator's certificate, or must previously obtain a special permit from the Commission Sportive (the Committee of the Royal Aero Club) or their delegates, the Commissaires (Clerks of the Course).”

The following aviators' certificates were granted:—

No. 11. Hon. Manrice Egerton.
No. 12. James Radley.
No. 13. Hon. Alan Boyle.

**Timekeeper.**—A. G. Rennie, of Dunnottar, Scotstounhill, Glasgow, was appointed an official timekeeper to the Royal Aero Club.

**Aeroplane and Motor Boat Race.**—The following sub-committee was appointed to take in hand the arrangements for the race between the representatives of the Motor Yacht Club and the Royal Aero Club:—

Mr. G. Brewer, Mr. A. Rawlinson, and the Hon. C. S. Rolls.

The event will take place during the Bournemouth aviation week over a sea course to be agreed upon by the respective Clubs.

**Worcester Accident.**—A letter was received from Mr. W. B. Hulme, the coroner at Worcester, asking the Club to send a representative to give expert evidence in connection with the lamentable accident which occurred recently at Worcester. Mr. John Dunville kindly undertook to attend the adjourned inquest.

## Bournemouth International Aviation Meeting.

**Closing of Entries.**—Members are reminded that the entries for the international aviation meeting to be held at Bournemouth from July 11th to 16th, 1910, close on the 23rd inst. Intending competitors should lose no time in obtaining their aviators' certificates in accordance with the conditions laid down by the Federation

Aeronautique Internationale. A special office has been opened at 166, Piccadilly, London, W., where all information will be supplied.

**Hotel Accommodation.**—Owing to the large number of applications for accommodation at the Hotel Burlington, only a few rooms are now available, and members desirous of securing same should make early application to the Secretary of the Club.

## Balloon Race at Hurlingham.

The race for the Hedges Butler Challenge Cup will take place at Hurlingham Club, Fulham, S.W., on Wednesday, June 22nd, at 3 o'clock.

Members of the Royal Aero Club will be admitted to the Hurlingham Club free, on presentation of their Royal Aero Club membership cards.

Members of the Royal Aero Club can obtain special tickets for the admission of their friends, who are not members of the Royal Aero Club, to Hurlingham, from the Secretary of the Royal Aero Club, price 10s. each.

The Club balloon, “Aero Club IV,” will follow the race. Members wishing to make the ascent are requested to notify the Secretary at once. The fee will be £5 per person, and the three seats available will be allotted in order of application.

## Sailor Aeronaut Race.

The sailing race between members of the Motor Yacht Club and the Royal Aero Club will take place to-day, from the yacht “Enchantress,” anchored off Netley Hospital.

The Motor Yacht Club has extended its hospitality to members of the Royal Aero Club for the day, and it is hoped that a large number will avail themselves of this kind invitation.

A train leaves Waterloo at 10.15 a.m., arriving at Southampton West 11.53. The club motor launches will leave the Town Quay at 12 and 12.45 p.m., taking members to the “Enchantress” in time for lunch.

## Accident to Hon. M. Egerton.

Members will be glad to learn that the accident to the Hon. M. Egerton is not so serious as at first thought, and that he is now well on the way towards complete recovery.

## Claude Grahame-White Testimonial Fund.

Donations received up to Tuesday, June 14th, 1910.

Amount previously acknowledged	£1,787	18	5
Readers of <i>West Herts and Watford Observer</i> , per			
C. H. Peacock, Ltd.	...	...	3 16 6
W. S. Wildblood	...	...	1 0 0
G. A. Keen, F. Gibbs and W. H. Sherman, of			
Merrrow, per			
Mrs. Deane	...	...	0 5 0
Col. Browell	...	...	0 2 6
Baring Gould	...	...	0 2 6
H. K. Gregson	...	...	0 2 6
F. Gibbs	...	...	0 1 0
G. Keen	...	...	0 1 0
W. J. Sherman	...	...	0 1 0
		0 15 6	
		£1,793	10 5

HAROLD E. PERRIN,  
Secretary.

166, Piccadilly.

## A SPLENDID MAP FOR MOTORISTS OR AVIATORS.

QUITE one of the most beautiful and thoroughly useful productions in the way of maps for the use of motorists and others is that which has comparatively lately been issued by the Ordnance Department of the Government, and of which samples have been sent to us by Mr. T. Fisher Unwin, the official publisher for them. A special interest also attaches to it at the present time owing to the almost equal value which it is likely to possess for the flying man of the immediate future, as it does for the motorist, cyclist and pedestrian of to-day, since the manner in which the lay of the land is indicated, both as regards relative altitude and as regards the waterways as well as the roads, is such that a veritable bird's-eye picture is obtained, that conveys a far more live impression of things

than any other form of map with which we are acquainted. This particular series is printed on what is known as the “layer” system, and the scale is two miles to the inch, while perhaps the most marvellous thing about it is the ease with which even the smallest roads can be followed, and with which, although all necessary names are given, there is no difficulty whatever in reading any of them owing to overcrowding or to overlapping. The altitudes are indicated by the shading, and needless to say the maps are absolutely authoritative, inasmuch as they are published by direct Government sanction. Already they can be obtained in this series—in either of the usual forms of mounting—in sheets that cover the whole of England.

## PROGRESS OF FLIGHT ABOUT THE COUNTRY.

(NOTE.—Addresses, temporary or permanent, follow in each case the names of the clubs, where communications of our readers can be addressed direct to the Secretary. We would ask Club Secretaries in future to see that the notes regarding their Clubs reach the Editor of *FLIGHT*, 44, St. Martin's Lane, London, W.C., by first post Tuesday at latest.)

**Aeronautical Soc. of Great Britain** (53, VICTORIA ST., S.W.).

THE second meeting of the forty-fifth session will take place at the Royal Society of Arts, John Street, Adelphi, on Thursday, June 30th, at 8.30 p.m. Papers will be read by Major Baden-Powell and Mr. B. G. Cooper. The title of Mr. Cooper's paper will be "Some Principles of Propulsion and their Application to Flying Machines."

Members requiring additional tickets for the introduction of friends are requested to apply to the secretary as early as possible.

**Birmingham Aero Club** (165, HAMPTON STREET).

AN interesting exhibition of model aeroplanes was held in the Edgbaston Botanical Gardens on Friday and Saturday last and the number of entries was so large, there being upwards of 170, that the judges, Messrs. P. L. Renouf, M. Tombs and Dr. Ratcliffe, were kept busy during both days in deciding the awards. The Lord Mayor of Birmingham opened the exhibition, and wished the club every success. It had, he said, proved its usefulness, and he believed the science of aviation would benefit by their work. Fine weather prevailed and the conditions were almost ideal for model flying, but unfortunately the close proximity of the trees to the lawn often interfered with the flights. In arriving at their decisions the judges took directional stability into consideration as well as general stability, but some of the flights were so extraordinarily good that they found it very difficult to arrive at a decision. The full awards were as follows:—

Class 1.—Open to inventors who had original designs for the accomplishment of aerial transit: 1, Mr. Roland Ding; 2, Mr. C. P. Bragg Smith; 3, Mr. W. Davis.

Class 2.—Open to all comers: 1, Mr. C. P. Bragg Smith; 2, Mr. C. P. Bragg Smith; 3, Mr. R. Ding. A special prize was awarded to Mr. R. Platts.

Class 3.—All clubs: 1, Mr. E. Noble; 2, Mr. Crosby; 3, Dr. Ratcliffe.

Class 4.—Open to members of the Birmingham Aero Club: 1, Mr. E. Trykle; 2, Mr. H. P. Turner; 3, Mr. E. Trykle.

Class 5.—Open, model aeroplanes made to scale: Mr. T. W. K. Clarke, Mr. H. Leeson.

Class 6.—Open, petrol-driven models: Mr. Whitworth and Mr. Scholefield, equal.

Class 7.—Open, light petrol motors: 1, Mr. W. G. Jopson; 2, Mr. Lewis.

Class 10A.—Open to amateurs, best flight: 1, Mr. E. Noble; 2, Mr. R. Platts.

Class 10B.—Open, for Birmingham Aero Challenge Shield: Mr. Gordon Jones.

Class 12.—Aeroplane accessories: 1, Forward Model Syndicate; 2, Elcon Manufacturing Syndicate. Mr. R. Ding and Mr. Jopson awarded special certificates, the former for laminated propellers.

Class 13.—Model aeroplanes rising from ground under their own power: 1, Mr. Hill; 2, Mr. Mason.



The Kite and Model Aeroplane Association Competition, June 6th.—On left with model, Cyril Ridley, winner of third prize in Youths' Competition; on right R. Mann, winner of first prize in Youths' Competition and second prize in Steering Competition. Between them is Mr. Robert P. Grimmer, Secretary of the Arundel House School Aero Club, of which both the youths are members.

**Contisborough and District Model Aeroplane Society.**

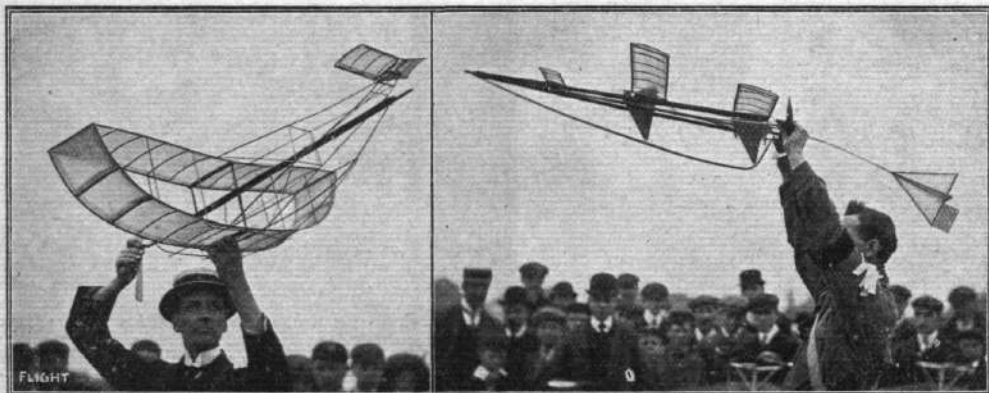
TESTS as to the ability of the various models entered for the Competitions on July 2nd will be carried out to-day, Saturday, at the Old Hall, from 3 to 8 p.m., and for the convenience of those who cannot possibly attend them, further trials will take place on the 25th inst. The entrance fee is 3d. for each model for each competition, *to members only*. To non-members the entrance fee is 6d. The competitions are for:—1. Excellence of construction (members only); 2. Longest flight (members only); 3. Longest flight (open); 4. Gliding longest distance (open). All models must start from the ground and not be launched by hand.

**Coventry Aeronautical Society** (18 and 19, HERTFORD STREET).

It is proposed to hold a series of competitions for model aeroplanes on Saturday, July 9th; and Messrs. Humber, Ltd., have kindly granted permission for the use of the field adjoining their works which they use for aeroplane experiments. Further details as to the classes and conditions will be announced at the earliest possible moment.

**Hastings and St. Leonards Aero and Scientific Model Assoc.** (60, CAMBRIDGE ROAD, HASTINGS).

A MEETING was held on Monday at 47, Havelock Road, at which there were about between 20 and 30 persons present. It was



THE KITE AND MODEL AEROPLANE ASSOCIATION COMPETITION, JUNE 6th.—Methods of launching the models. On the left Mr. G. P. Smith's biplane, and on the right a triple monoplane.

decided to start an association in the district with the above title. A report drawn up by the special committee, appointed at a previous meeting, was discussed, and the following ideas were adopted:—That the subscription be 5s., with no entrance fee for those joining at the formation of the society; that the society be governed by a committee who have the right to add three members, and to fill all vacancies; that, if possible, affiliation be made with Aero Models Association. Mr. H. F. Cheshire (borough analyst) was elected acting president, and the following committee was selected:—Messrs. Butler, Ticehurst, Navarro, Penny, Moffett, and Martin. A meeting of committee to draw up rules, &c., was held on Tuesday night.

#### Kite and Model Aeroplane Assoc. (27, VICTORY ROAD, WIMBLEDON).

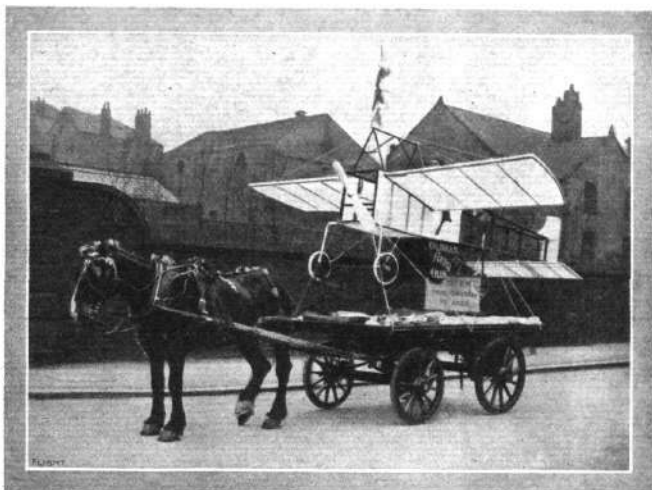
THREE competitions were on the programme of the Association's first prize competition meeting of the year, which took place on Wimbledon Common, on Saturday, June 4th, viz., the Longest Flight and Stability Competition, Steering Competition, and a Youths' Longest Flight and Stability Competition. Some good flights were witnessed, the longest by Mr. C. R. Fairey's monoplane, which measured 153 yds. 1 ft. 10 in., was run very close by Mr. W. R. Ding's Ding-Sayers monoplane, with over 148 yds. to its credit. The stability of the majority of the models was exceedingly good. The steering competition, in which the models had first to be flown in a straight line and then in circles to the right and left, taxed their capabilities to the utmost. Monoplanes of the type made popular by Mr. T. W. K. Clarke, with one or two propellers, constituted the majority of the entries, although the two biplanes competing gave excellent results, and A. F. Riley's Langley-type double monoplane created quite a sensation by a splendidly steady glide from about 20 ft. after its propeller had stopped revolving. Mr. G. P. Bragg Smith's biplane, which scored very high marks (92) for stability, was placed fourth in the longest flight competition, as it only covered 70 yds.

The Judges, Major Baden-Powell, Mr. J. H. Ledebour, Mr. C. Brogden, and Mr. T. O'B. Hubbard, made the following awards:—Longest Flight and Stability Competition (open).—1st prize, Challenge Trophy and gold medal; 2nd prize, silver medal; 3rd prize, bronze medal.

	Length of flight.	Stability marks.
	yds. ft. in.	max. 100.
1. C. R. Fairey (Fairey monoplane)	153 1 10	85
2. W. R. Ding (Ding-Sayers monoplane)	149 0 6	67
3. M. G. Jones (Jones biplane)	109 0 6	93

#### Mr. Grahame-White at Halifax.

MR. CLAUDE GRAHAME-WHITE having arranged to give demonstrations of flying on his Henry Farman machine at Halifax during last week-end, about 5,000 assembled on Friday afternoon on the racecourse to see the sport. Unfortunately it would appear that the place is not particularly suitable for the purpose, as the treacherous winds are rather the rule than the exception. After waiting till eight o'clock, in the vain hope that the wind would be



Half-size Blériot Model exhibited in the Oldham Cycle Parade by the Aero Club of that Town.—This clever piece of work was awarded first prize, a handsome regulator clock.

Steering Competition (Open).—1st prize, gold medal; 2nd prize, silver medal; 3rd prize, bronze medal.

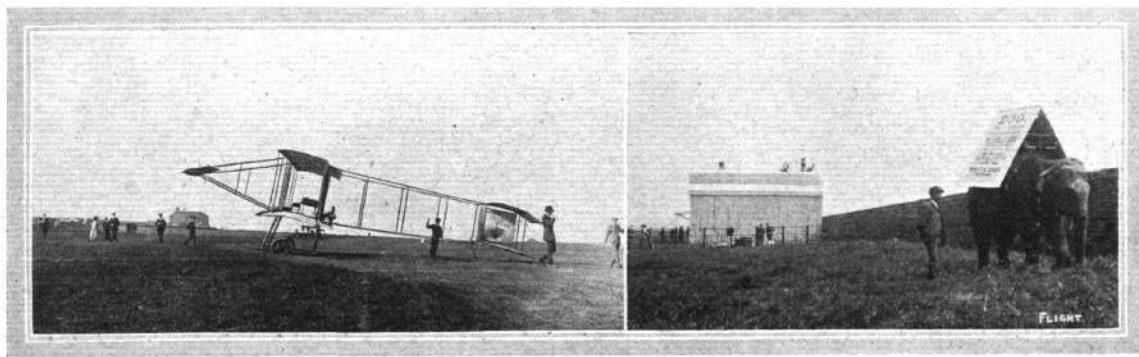
1. C. R. Fairey (Fairey monoplane).
2. A. P. Ridley (Marlboro tandem biplane).
3. R. F. Mann (Mann monoplane).

Youths' Longest Flight and Stability Competition (open).—1st prize, silver medal and 15s.; 2nd prize, bronze medal and 10s.; 3rd prize, bronze medal and 5s.

	Length of flight.	Stability marks.
	yds. ft. in.	max. 100.
1. R. F. Mann (Mann monoplane)	96 2 0	82
2. G. Tester (Marlboro tandem biplane)	107 0 0	72
3. C. B. Ridley (monoplane Ridley plane)	46 0 0	91

The silver medal given in this competition for the best model made by the competitor was awarded to G. Tester.

more accommodating, Mr. Grahame-White pluckily determined to chance it, so as not to disappoint the crowd. He rose to a height of about 50 ft., but descended after a trip of only four minutes. On Saturday, Mr. Grahame-White made five trips. The longest was the first, of 13 minutes' duration, during which he flew from the flying ground to the Zoo and back again. The other trials were all under 10 minutes in duration, and in the last, one of Mr. White's assistants, Mr. Cresswell, was taken up as a passenger.



FLYING AT HALIFAX.—Mr. Claude Grahame-White's Henry Farman machine on the racecourse prior to his daring flight on Friday evening last week. The elevator of the machine is just visible outside the shed in the right-hand picture.



# BRITISH NOTES OF THE WEEK.

## Blackpool Flying Carnival.

THE general committee of the Lancashire Aero Club have approved the proposal put forward by Mr. Huntley Walker, the Chairman of the Club, that the two National aviation meetings allotted to the Lancashire Aero Club by the Royal Aero Club should be held at Blackpool on the same site as last year's aviation meeting.

Also that the meetings be held together as one twelve days meeting, the first part of the programme to be competed for from July 28th to August 3rd, and the second part of the programme to be competed for from August 15th to August 20th, the intervening ten days to be devoted to an exhibition of aeroplanes and aeroplane motors, with exhibition flights each afternoon by one of the leading French aviators, who will be specially engaged for the purpose.

It is understood that the Earl of Lonsdale, the President of the Lancashire Aero Club, is in favour of the Lancashire meetings being held at Blackpool, and will once again give the meetings his full support.

The whole of the £12,000 required for the expenses of the flying carnival has been subscribed by Mr. Huntley Walker, who is also willing to guarantee a further £5,000 if required, thus avoiding any necessity for a guarantee fund.

Mr. Huntley Walker has also started the prize fund with a subscription of £500, and a great many offers of assistance to the prize fund have already been received by the club.

"The beach at Filey extends four miles, and when the tide is out there is nearly a quarter of a mile in width. The sands are generally smooth and hard. On my J.A.P. motor cycle I have



Front view of the aeroplane with which Mr. Eugene Gratze is experimenting at Canewdon, near Southend, to which reference has been made in these columns recently. This shows the general arrangement of the machine. The balancing flaps on the main planes are shown in their raised position.

done 46 m.p.h. per Cowey speedometer, and with my 20-h.p. Vulcan car have done 35 m.p.h. with six men up.

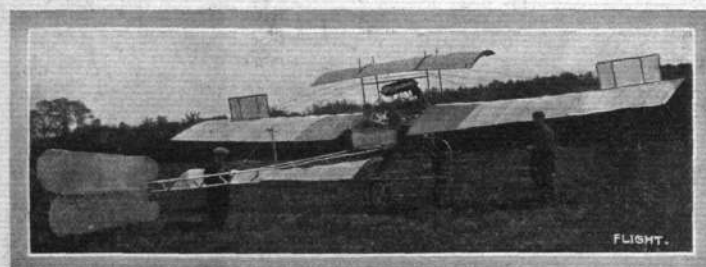
"This will show you what Filey sands are like. A splendid site is being prepared for sheds, a proper slipway from the sands, 12 yds. wide, is being made, and an approach road from the land side half a mile long for motor cars is being constructed. I intend to put up two large sheds at present, and am prepared to let one of them for short periods to other experimenters like myself."

## A Biplane at Burton.

IN a field near Netherseal on Saturday last Mr. Sydney Evershed, of Burton, commenced experiments with a biplane which he has constructed in his leisure time during the past few months. In general appearance the machine somewhat resembles the latest Farman with monoplane tail, but it is smaller, being only 25 feet of span, while the propeller is placed in front. A motor of 10-h.p. is fitted at present. During the tests on Saturday one or two minor defects were brought to light and these will be put right before any attempts at long flights are made.

## Practice at Dunstall Park.

SEVERAL of the sheds at the Dunstall Park Racecourse being finished, are now occupied, and last week there was a good deal of practice. On Tuesday Capt. Dawes on a Blériot, and Mr. Granville



Rear view of Mr. Eugene Gratze's Machine.—The elevating is done by the central portion of the small upper plane in conjunction with the balancing flaps on the front edge of the main plane.

The club are already assured of the presence of at least six French aviators of note, together with the best of the English aviators. The number of entries will be restricted to fifteen, and the number of aviators anxious to compete at Blackpool are many times in excess of this number.

The principal prize of the meeting will be one of £2,000 for totalisation of distance. There will also be prizes of £1,000 each for altitude and for speed, and prizes of £500 each for passenger carrying and starting quickly.

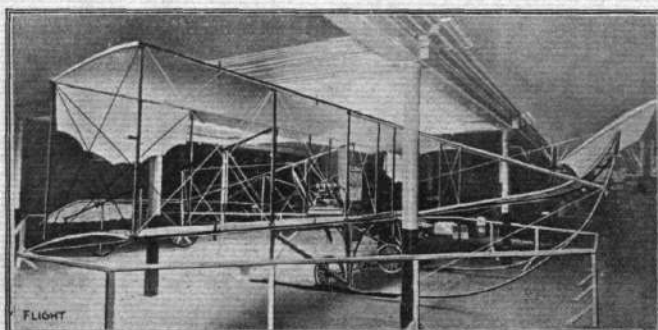
The hangars, enclosures, and stands for the aviation carnival are to be of a permanent nature, so as to establish the aerodrome as a permanent flying ground.

## Mr. H. Ferguson Progresses.

ON Wednesday of last week, Mr. H. G. Ferguson, who has now taken his all-British monoplane to Magilligan Strand, co. Derry, made a flight of 2½ miles at a height of between 30 and 40 ft. Previously the aviator had flown for a mile.

## Flying on Filey Beach.

It looks as if the well-tried stretch of hard sand on Filey Beach will become a regular practising ground for flyers. Mr. J. W. F. Tranmer, having obtained formal permission from the Filey Urban District Council for its use, is pushing ahead with his plans. He writes us upon this subject as follows:—



Mr. Claude Grahame-White's new British-built Biplane on which he hopes to fly from London to Paris.—This photograph was secured in Messrs. Gamage's show-rooms, where the machine has been on exhibition recently.

Bradshaw on the Star monoplane, several times flew the length of the course. Capt. Dawes was also out on Thursday and Friday, on the latter day making a short circular flight. Other machines housed on the ground are a Humber belonging to Mr. Holder, and a Demoiselle owned by Dr. Hands, both of which are practically ready for trial.

#### A1 Canterbury Monoplane.

DURING the past winter, Messrs. H. F. de Pavillet and H. A. Dawson have been building a modified Blériot monoplane, which they have now taken to the Old Park, Canterbury, in order to thoroughly test it. It is somewhat smaller than the cross-Channel type of Blériot machine, and is fitted with a twin-cylinder engine.

#### Hon. C. S. Rolls at Hurlingham.

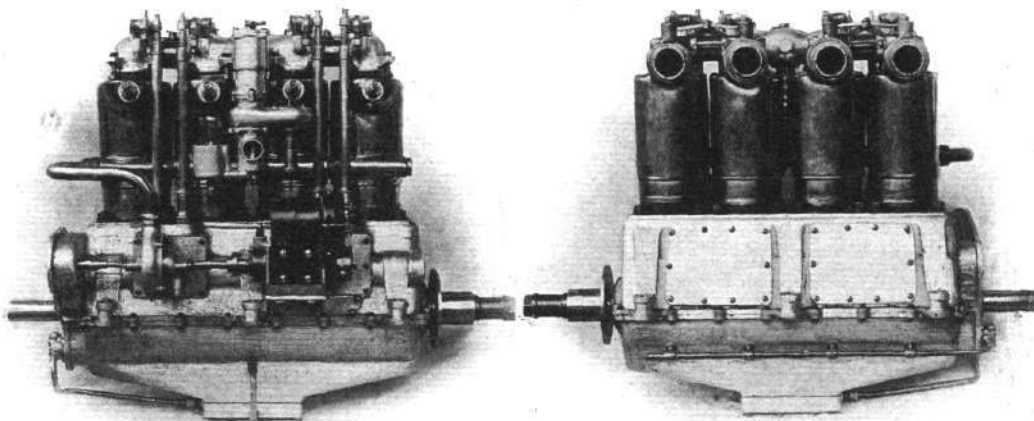
PROVIDED the weather would permit, the Hon. C. S. Rolls had arranged to make a series of exhibition flights on his Wright machine at Hurlingham, on Wednesday last, and if it is possible he may be seen flying there again to-day (Saturday).

#### Flyers at Madame Tussaud's.

OWING to the numerous inquiries which have been made by visitors to Madame Tussaud's for a model of the Hon. Charles Stewart Rolls, the hero of the recent flight across the English Channel, it has been decided to place his figure in the exhibition, and Mr. John Tussaud is now engaged on a model of the intrepid aerial navigator which will be added in the course of the next few days, together with a fac-simile of the aeroplane in which he made the journey to and from France. The figures of flying men already in the exhibition include M. Paulhan, Mr. Grahame-White, Count Zeppelin, M. Blériot, and Mr. Cody, with models of their flyers.

#### "Aviation Pushball."

A NEW game which will be included in the programme of the Royal Naval and Military Tournament, opening at Olympia on June 20th, is to be known as "Aviation Pushball." It has been invented by Capt. Bruce, of the Irish Guards, and is played with a leather balloon about 2 ft. in diameter, which will have to be driven by means of tennis racquets through the opponents' goal.



Two views of the 40-h.p. Humber Flight Engine entered for the Alexander £1,000 competition. This 4-cyl. engine, the bore and stroke of which are 110 mm. by 120 mm., weighs 195 lbs., and gives a continuous output of 35-b.h.p. at 1,200 r.p.m. Special features are the overhead valves, the copper-deposited water-jackets, and the ball-bearing with thrust races on the crank-shaft.



## RECORD CROSS-COUNTRY FLIGHT IN FRANCE.

FOR some time Capt. Marconnet and Lieut. Fequant, two of the Farman military pupils, have been contemplating a flight from Chalons to the French capital, and on Thursday of last week they successfully achieved their object. Both officers, in uniform, took their places on the machine at twenty minutes to five on the morning in question, Lieut. Fequant being in charge of the levers, and after a preliminary circuit round Chalons Camp they started off in the direction of Montmirail. For 160 kiloms. (100 miles) they flew on, Capt. Marconnet directing his companion by means of a map, and taking photographs and observations of the country passed over. Eventually they reached the "polygon" at Vincennes,

and there, after making a couple of circles round the ground, Lieut. Fequant brought the Henry Farman biplane to rest, after a trip which had lasted 2 hrs. 30 mins., thus beating both the cross-country and passenger records. Naturally the two officers had a very enthusiastic welcome at the hands of the military authorities, and were entertained to luncheon by the Aero Club of France, the function being attended by General Brun, the War Minister, and many other high officials of the Government.

In recognition of their splendid flight, Capt. Marconnet and Lieut. Fequant have been granted the Cross of Chevalier of the Legion of Honour.



## CROSS-COUNTRY FLYING IN AMERICA.

FOLLOWING up the recent successful journey of his master, Glenn Curtiss, from Albany to New York, Charles Hamilton on a similar machine to that used by Mr. Curtiss at Rheims, flew from New York to Philadelphia and part of the way back on Monday. Rising from Governor's Island at 7.35 a.m., he made straight for Philadelphia, covering the 86 miles in 1 hr. 52 mins., his average speed being about 47 miles an hour. At half-past eleven he started on the return journey, and all went well until after passing Trenton, where the aviator got mixed in his directions, and followed the wrong railway. Realising he had lost his way, and having trouble with his engine, he came down on some mud flats at Perthamboy, unfortunately damaging the propeller. He had covered 56 miles of the return journey in an hour and a half. Late in the afternoon he

started again, and flew the remaining 30 miles in as many minutes. Previous to this flight, Hamilton had been giving demonstrations on Governor's Island, New York, where on Sunday he made a spectacular flight which lasted 66 mins.

#### More American Prizes.

AT a banquet given to Glenn Curtiss by the New York Press Club it was announced that Mr. Edwin Gould would offer a prize of \$15,000 to the inventor of the best aeroplane fitted with two motors, the idea being to encourage inventors to equip their machines with reserve power. The *New York Evening World* is offering a very valuable challenge cup for the longest continuous flight by an amateur during each year.

# CONTINENTAL FLIGHT MEETINGS.

## The Budapest Flying Meeting.

LAST week we recorded the doings on the two opening days of the important flying week at Budapest. On the 7th, the principal item on the programme was the race from Budapest to Gyser (115 kiloms.) and back, but Pischoff was the only starter, and he was forced by the bad weather to land at Labalan, and later he flew on to Dunaalmás, 68 kiloms. from the start. A serious accident occurred to Efimoff, whose machine capsized, throwing him out and breaking his arm. Late in the afternoon, when the weather had calmed down, Wagner flew for 1 hr. 3 mins., and also took part in the height competition with Kinet and Illner. The latter, on the Etrich monoplane, was the winner, reaching a height of 449 metres. On the following day the weather was again unsuitable for flying, but in the evening N. Kinet, Wagner, Latham, Frey, and Chavez all tried for the height prize, but Chavez was the only one to get very high, he reaching 442 metres. Thursday was an unlucky day, and three aviators came to grief. Andre Frey fell on to the railings in front of the grand stand, Latham had an accident through the motor setting fire to a control cord, whilst Bievolucie brought his Sanchez-Besa machine down with a crash. Wagner secured the honours of the day, flying 137 kiloms. in 2h. 2m. 42s., while Illner was second with 93.8 kiloms. in 1h. 45m. 40s., and Frey third, with 44 kiloms. in 43 mins. 54 secs. For the speed prize three competitors covered the 10 kiloms. course as follows:—Illner, 8 mins. 43½ secs.; Wagner, 8 mins. 47½ secs.; Jullerot, 9 mins. 10 secs. For the height prize Illner went up to 417 metres, Chavez being second with 311 metres. On Friday Wagner and Engelhardt were the only two to fly. The former flew 42 kiloms. in 39 mins. 50 secs., while the latter, on his Wright, covered 15 kiloms. in as many minutes. Both Illner and Wagner met with slight mishaps through landing too suddenly. On Saturday no flying was possible owing to the wind, but Sunday saw some of the champions at work again. Wagner covered 129 kiloms. in 2h. 3m. 46s., Kinet did 103.6 kiloms. in 1h. 44m. 50s., and Mme. de la Roche was up for 40 mins. 20 secs. In the height contest Frey was best with 108 metres, and Latham second with 151 metres. The latter also won the speed prize, his time for the 10 kiloms. being 7 mins. 56 secs., while in the slow competition Engelhardt was timed to do the 10 kiloms. in 11 mins. 47 secs. Capt. Engelhardt also secured the passenger prize with a trip of 19 mins. 52 secs.

## Mondorf Bad Flying Meeting.

ON the 7th inst. the weather at Mondorf was against flying until late in the afternoon, and then Christiaens on the H. Farman, Mollien on the Blériot, and Petrowsky on his Sommer, each made short flights, the longest being by the last mentioned, of 24 minutes. Similar conditions prevailed on the following day, when the same

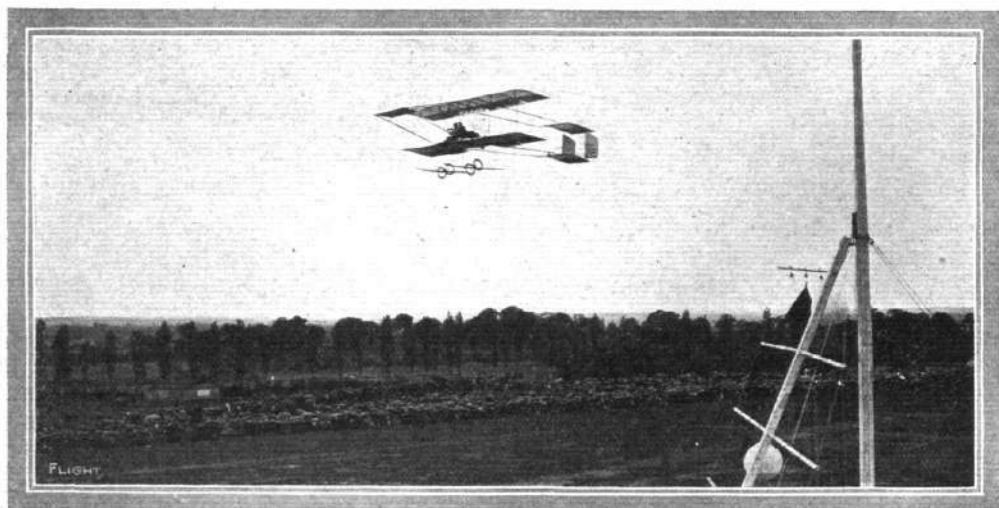
flyers were out, with the addition of Barrier on a Blériot. On the 9th, Christiaens, Petrowsky and Mollien were the only three to fly, and an interesting contest was fought between the two first-named for the prize for the longest distance without landing. It was won by Christiaens, who flew for 59 mins. 28 secs., beating Petrowsky by 1 min. 57½ secs. The latter, however, won the daily prize for the longest time in the air, being aloft altogether for an hour and three quarters, half an hour longer than his opponent. High winds practically precluded flying on Friday although Christiaens went up for a quarter of an hour, and on Saturday a similar state of affairs continued, when Christiaens contented himself with one round of the 2½ kilom. course in 2 mins. 30½ secs. The final day saw Petrowsky and Christiaens competing for the height and starting prizes, both falling to the lot of the former. For the height prize he got up to 102 metres, while for the starting prize he rose in 84.6 metres, 4 metres better than the best effort of Christiaens. During the whole eight days Christiaens' cumulative flying time was 2h. 50m. 39s., and he won the first prize, Petrowsky being second with 2h. 46m. 14s.

## Juvisy Flying Meeting.

WITH Dubonnet as the "star turn," a week flying meeting opened at Port Aviation, Juvisy, on Thursday of last week. Dufour brought out a Voisin, and was the first up, but came to grief after one round. During the day Dubonnet, on the Tellier, covered 37 kiloms. Didier, on his Henry Farman, just reached 30 kiloms.; Champel, on a Voisin, 25 kiloms.; and Audemars, on a Demoiselle, 5 kiloms. The next day was very boisterous, and Dubonnet was the only one to venture out during the time the meeting was on. He traversed 12.655 kiloms. in 11 mins. 28½ secs. Late in the evening Audemars made four circuits of the ground, and Didier also went round. On Saturday, however, the weather was much better, and Dubonnet flew 120 kiloms. during the day, while Didier covered about half that distance, and Audemars 23 kiloms. The flying seen on Sunday was even better still. Ladougue on his Goupy and Deletang on a Blériot, were among the performers; while Chaveau, on an Antoinette, in the course of a short trial for the height prize, went up to 130 metres, but was beaten by 5 metres by Ladougue. The longest flights were 65.36 kiloms. in 1 hr. 14 mins. by Dubonnet, 57.846 kiloms. in 1 hr. 4 mins. by Didier, and 20.526 kiloms. in 18 mins. 32½ secs. by Audemars. On Monday again wind and rain were supreme, and the aviators with one accord decided not to attempt any flying.

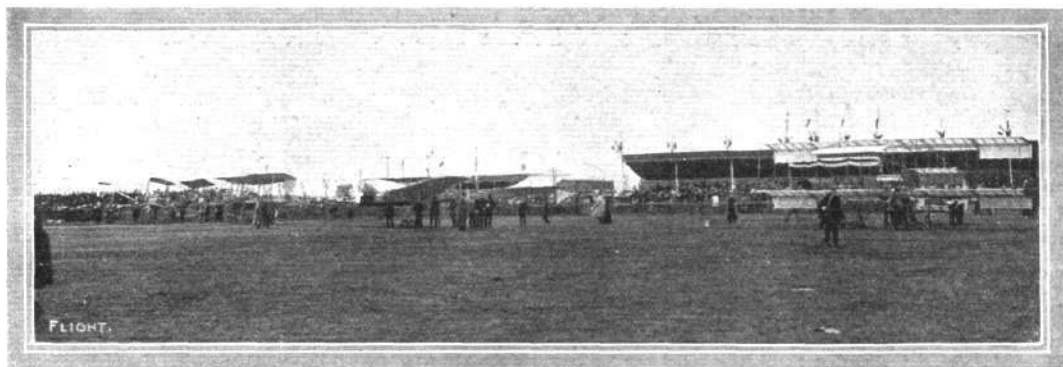
## Flying Week at Crau.

ON Sunday, the opening day of a flying week at the Crau aerodrome, near Marseilles, Cheuret and Daniel Kinet, with their Henry Farman machines, were the only ones to go up. Cheuret made three trial trips of varying length, and then he took up his wife for a short spin, an example which was quickly followed by Kinet.



Capt. Dickson beating the passenger-carrying record on his Henry Farman machine at the Anjou Aviation Meeting.





IN LINE FOR THE FIRST AERIAL "RACE."—MM. Martinet (H. Farman), Mumm (Antoinette), Legagneux (Sommer), and Capt. Dickson (H. Farman), ready for the start from the Anjou Aerodrome for the cross-country race to Saumur on June 6th.

#### Entries for Rheims.

At the beginning of the week the entries for the Rheims week, from 3rd-10th of July, numbered 63, made up of 40 biplanes and 23 monoplanes. The biplanes include 13 Henry Farman, 7 Voisin, 6 Sommer, 4 Wright, 4 Sanchez-Besa, 3 Savary, 2 Breguet, 1 Goupy, while the monoplanes consist of 11 Blériots, 6 Antoinettes, 3 Nieuports, 2 Hanriots, and 1 Tellier.

The Minister of War has appointed Capt. Etéve (Wright), Lieut. Camerman (H. Farman), and Lieut. Aquaviva (Blériot) to take part in the military competition.

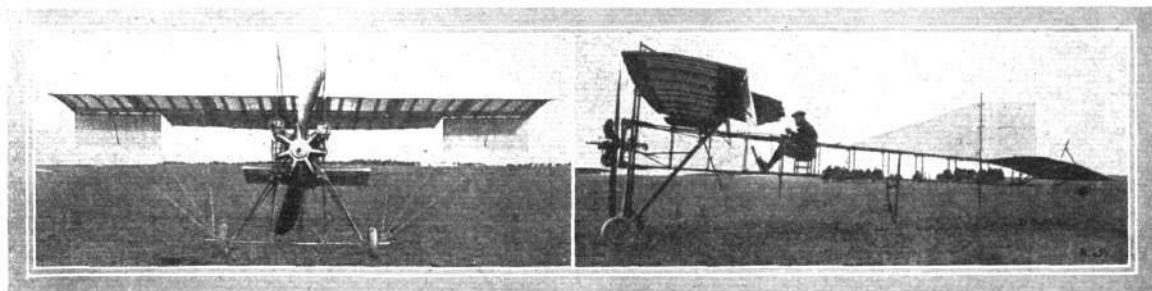
#### After the Anjou Meeting.

ALTHOUGH unable to take part in the race from Angers to Saumur, owing to an accident to his machine, Daniel Kinet got his machine repaired as soon as possible, and on the 8th inst. made several flights at Angers, in three of them being accompanied by the wives of officials of the meeting. On the previous day Legagneux made a flight of 25 minutes across country from Saumur, landing at Bray. Capt. Dickson and Martinet after short flights decided to pack up their machines and send them to Rouen instead of returning to Angers.

## THE FARMAN MONOPLANE.

LAST week we published details of the successful trial flights made by Mr. Henry Farman on his new monoplane, and now we are able to give a couple of photographs of the machine with

arrangement of the framework is clearly shown in the photograph\* but an important point in connection with the design is that the main planes are some distance above the framework, so that the



THE HENRY FARMAN MONOPLANE.—Views, from in front and of the side, of this new machine, the advent of which we announced a few weeks ago.

Mr. Farman at the wheel. It will be seen that the main plane resembles the upper plane of the Farman biplane, with the usual ailerons at the ends. The span is 8 metres, the overall length is a little less, while the weight is given as 300 kilograms. The general

aviator has a clear view of the ground beneath him. A Chauvière tractor is fitted, driven by a 50-h.p. Gnome motor. The rudder is mounted above the rear plane, with a triangular fin in front of it, while the rear plane itself is divided, the rear half serving as an elevator.

#### Wrights' Patent Litigation.

ACCORDING to a cablegram from New York, the United States Court of Appeal has dissolved the temporary injunctions obtained by the Wright Bros. against Mr. Glenn H. Curtiss and M. Louis Paulhan for infringement of the formers' patents.

#### More Ae.C.F. Pilots.

At the last meeting of the Committee of the Aero Club of France twenty-four applications for pilot's certificates were passed, the names of the successful aviators being as follows:—

Maurice Colliex (Voisin), Rene Labouchere (Antoinette), Louis Wagner (Hanriot), Jean Bielovucic (Sanchez-Besa), Henri Pequet (—), Capt. Etéve (Wright), Capt. Marconnet (H. Farman), Ernest Paul (Voisin), Louis Gibert (—), André Frey (Sommer), F. Champel (Voisin), Marcel Hanriot (Hanriot), Jean Dufour (Blériot), Commandant Clolus (Antoinette), V. Lebedeff (H. Farman), Marcel Paillette (Sommer), Ed. Audemars (Demoiselle), Gustave Blondeau (H. Farman), Armand Gobe (Antoinette), Edmond Dufour (Voisin), Albert Niel (Voisin), Ed. Nieuport (Nieuport), Capt. Madiot (H. Farman), Andre Tausin (Blériot).

# FOREIGN AVIATION NEWS.

## Morane Flies from Issy to Toury.

USING a modified cross-Channel type of Blériot machine, fitted for two passengers, Leon Morane made a splendid cross-country flight from Issy to Toury, with a stop at Etampes, on the 8th inst. At 9 o'clock in the morning Morane left Issy, and a little while after M. Blériot arrived at Etampes and said he expected Morane would fly over in a short time. A mist lay over the place, but ten minutes after M. Blériot's arrival the watchers espied a black speck in the distance, and as this grew nearer it assumed the familiar shape of the Blériot machine. Planing down from a height of 400 metres, Morane finished a trial trip which had lasted 49 mins. 57 secs., during which he had traversed 63 kiloms. About 5 o'clock in the afternoon he left for Toury, 30 kiloms. away, and reached there safely in 22 mins.

## Doings at Mourmelon.

**The Sommer School.**—Verstraten, on the 8th inst., carried a passenger on his Sommer biplane for 55 mins., while Vallon was out for 25 mins. Verstraten and Bouvier also made some good flights on the 10th inst., the latter taking Mauvais and Molla as passengers; while Dalliens, at his first trial, flew for 3 kiloms. Paul de Lesseps, at his second trial, kept going for 25 mins. on Friday.

**The Antoinette School.**—On the 8th Capt. Burgeat, with a trip of 20 kiloms., secured the fifth of the A.C.F. beginners' prizes. Wachter and Labouchere have been out each day giving instruction to their various pupils, and on Friday the latter made a flight of 10 mins., carrying two passengers, Count Robillard and Lient. Jost. Later in the afternoon he executed a couple of fine cross-country flights. Labouchere made three splendid trips of 20 mins. each in a violent wind on Monday.

**The Farman School.**—The various pupils both at the civil and military schools have made good progress. On Sunday, Van den Born was trying a new machine, and traversed 30 kiloms. in a trial trip, while Mr. Henry Farman was testing a new machine destined for the Russian Army. On Monday, Capt. Marie flew an hour and ten minutes in the morning and an hour and five minutes in the afternoon.

**The Voisin School.**—On the 8th Colliex was up for half an hour, and later on Niel, on his new pattern Voisin, made another cross-country trip to the Hanriot School at Rheims, returning the following day quite easily. De Ridder, another new pupil, has been making splendid progress, and on Monday made a trip lasting 45 mins., while Langhe circled the flying ground twice. On Saturday both De Ridder and Maurice Nogues were timed for the necessary flights to secure their pilot's certificates.

**Other Flyers.**—Weiss has been out on his Koechlin machine practically every day, while Gage, Dufour and Ehrman have been continually testing their Blériot machines. On Monday a new monoplane was tried by M. Protin, and at the first attempt made three long hops of 400 metres each.

## Record Monoplane Passenger Flight.

YET another step forward was taken on Sunday last at Toury, when Morane, on his Blériot monoplane, beat the world's record for a flight with a passenger, for that type of machine. Accompanied by the foreman of the Blériot works, Morane flew round and round above the flying ground at Toury for an hour and a half, during which he traversed 85 kiloms.

## Practice at Issy.

LIEUT. BIER on the Montgolfier monoplane and Masioli on the Saulnier single decker, Vendome on his monoplane and Bunau-Varilla on his Voisin have all been doing good flying during the week, while Morane before he flew to Toury, gave some splendid exhibitions on the Blériot. Twice on the 7th inst. he made ten circuits of the ground, taking Capt. Brousse as a passenger during one trip.

## Henry Farman School at Etampes.

THE instruction biplane at the Henry Farman school sees good service, and rarely does less than 200 kiloms. a day with two people on board. On the 8th inst., Herbst, the assistant instructor, made flights of varying duration with over a dozen pupils, including Mme. Aboukaia, MM. Lamartin, Baugniet, Togni, Sallard, Vernley, Koffman, Kostin; the Russian Captains Baskine, Oliniane, Matziewitch; and the Japanese officers, Capt. Hino and Capt. Tokagawa.

## A New Breguet Pilot.

ON Sunday, Paul Hesne, who has been learning to fly a Breguet biplane at Douai, made the necessary flights to secure his pilot's certificate after two days' apprenticeship. Bathiat and Aligro, two other pupils, have also made good flights, the former taking his sister as a passenger occasionally.

## Maurice Farman School at Buc.

DURING the indisposition of Mr. Maurice Farman, the pupils Barra, Brandel, Renaux, Martin, Gaudry, Capt. Byasson, and Capt. Duperron have been taking lessons from Tabateau, and on Saturday he carried each one for a long trip over the country.

## High Flying in America.

FROM New York it is reported that on Tuesday, at Indianapolis, Mr. Walter Brookings, on a Wright machine, ascended to a height of 4,384 ft., beating the world's altitude record.

## "Prix des Débutants."

FOUR of the prizes offered by the Aero Club of France for beginners have now been awarded as follows:—First prize of 1,000 francs to R. Martinet for his flight of 30.8 kiloms. on May 20th; second prize, 500 francs, A. Didier, flight of 30.8 kiloms. on May 21st; third prize, M. Tetard, flight of 27.72 kiloms. on May 20th; and fourth prize, Ch. Wachter, flight of 27.72 kiloms. on May 29th.

# CORRESPONDENCE.

\* \* The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.

Correspondents asking questions relating to articles which they have read in **FLIGHT**, would much facilitate our work of reference by giving the number of the letter.

**NOTE.**—Owing to the great mass of valuable and interesting correspondence which we receive, immediate publication is impossible, but each letter will appear practically in sequence and at the earliest possible moment.

## WING PROPULSION.

[572] With reference to letter 491 and your comments thereon, permit me to offer a few remarks.

It is true that certain "authorities" have laid it down that there is nothing to be gained by adopting the wing, or "active-surface," principle in place of the aeroplane, or "inert-surface" principle. Their arguments, however, leave me quite unmoved. When I see one of our present inert-surface machines performing feats such as comparatively heavy birds, like the partridge or wild duck, accomplish with ease, I may conclude that the inert-surface machine is worth developing. Anyone who has studied the flight of birds under varied conditions, and has seen their power of abrupt ascent when required, will appreciate the point. It is quite beside the point to allege that the bird in such circumstances uses an inordinate

amount of power. As a matter of fact it does not, but in any case the point is irrelevant. For will anyone deny that, no matter what amount of power we crammed into the present "aeroplane," it simply could not do what numberless birds do daily as a matter of course? A condor weighing 21 lbs. will lift a lamb weighing 19 lbs. at an angle of ascent of about 1 in 4. This means a total weight equivalent of about 47 lbs. to be raised by means of a wing area of about 8 sq. ft., with a power available of certainly much less than a horse-power. A Wright machine lifts about 45 lbs. per h.p. at an angle of ascent of 1 in 30 or 40.

What is the reason for the great disparity between the two performances? It is twofold. In the first place, the oscillating propeller (in which class the wing falls) is, both in theory and in fact, more efficient in principle than the screw propeller. Considerations of space prevent me from entering into a full discussion of this question, but I would refer your readers to the letters from Mr. H. C. Vogt in *Engineering* of the 31st July, 1908, and 25th September, 1908. Mr. Vogt gives both experimental and mathematical proofs of the superiority of the oscillating propeller over the screw. The experiments were carried out under the aegis of the Danish Admiralty and Institute of Civil Engineers, and showed a gain of between 10 to 15 per cent.

in favour of the oscillating propeller. Mr. Vogt's arguments are conclusive, and I have not seen them controverted. The fact, however, that the bird has a more efficient propelling apparatus than the aeroplane screw is not adequate to explain the striking superiority of the bird as an abrupt riser. The really important factor which gives the bird its great advantage is the same as that which enables a single horse to climb a hill with a heavy load at a pace that could not be approached by a "1-h.p." petrol motor cycle similarly loaded. That factor is "flexibility," the ability to meet, equally efficiently, widely varying conditions of load. The steam engine possesses this power in a high degree, the internal-combustion motor practically not at all. The deficiency can be met to a great extent by variable gearing, but the gear-box is not yet a feature of "aeroplanes." The "aeroplane," therefore, starts heavily handicapped by an inefficient power plant. Worse still, its rigid screw-propeller is even less "flexible" than its power plant. A rigid screw-propeller can be designed to give its maximum efficiency (not higher than 70 per cent.) at a certain pre-determined rate of advance and revolution. Its efficiency falls off, however, immediately either of these factors alters. The inert surfaces of the "aeroplane" can be given a limited degree of "flexibility" by adjusting their angle of incidence.

The bird, on the other hand, has a power-plant as "flexible" as that of the horse, and a propeller and sustainer equally "flexible" (its pitch, rate, and amplitude of oscillation, surface, and direction of thrust can all be varied at will). Small wonder then that it is able to put our attempts at flight somewhat in the shade.

The active-surface principle, as exemplified by the bird, being so manifestly superior to the inert-surface principle, as exemplified by the "aeroplane," naturally leads one to ask why it has not been successfully adapted to mechanical flight. The answer is "mechanical difficulties." That is the crux of the whole matter. The invention and perfection of a mechanism to perform efficiently all the varied functions performed by a bird's wing is a matter of no small moment. The difficulties are many, and have so far proved insuperable. I think, however, that I have succeeded in overcoming them by means of inventions which I am at present developing.

Surbiton.

"OCTAVIUS."

## FLIGHT OF MODELS AND THE DUNNE MACHINE.

[573] Some of your readers may be interested in the curious fact that less power is required to drive an aeroplane through a given distance (say from A to B in sketch) by allowing the plane to take a course as indicated in dotted lines than is required for driving the plane on



a purely straight course. This phenomenon is, I take it, due to the "lift" varying as the square of the velocity, and the fact that edge resistance plays a very small part during the descent of the plane during the first part of the flight.

It appears that the path of flight taken by paper powerless models is due to this peculiarity (i.e., when the models are not weighted too heavily).

The velocity of the draught from a good air-propeller plays an important part in the construction of any aeroplane about which I have previously written you, and I should be very grateful if any of your readers can give me data of "rate of rotation of draught" and "horizontal rate of travel of draught" for various h.p., assuming the propeller to be two-bladed and 6 ft. diameter tip to tip.

I shall be able to send you a more detailed description and drawings in about a fortnight's time.

Considerable interest has arisen here in the "Dunne" aeroplane, and as all the descriptions that (as far as I am aware) have appeared at present have been very meagre, I feel sure your readers would be glad to see a full description of it in FLIGHT. I, personally, am particularly interested in the method by which automatic lateral stability is obtained, which at present, owing to lack of descriptive detail, I am quite unable to grasp.

Portsmouth.

C. TEASDALE-BUCKELL, R.N.

[We do not quite follow our correspondent's theory in connection with the power required for flight. A model glider, if launched at a velocity other than its natural velocity, follows an undulating path as a means of adjusting itself to the conditions. If the launching velocity is too low it "troughs" in order to increase the speed, while if too high it "crests" in order to retard the speed. We say

"in order to," for the model does almost behave as if possessed with a sense of its purpose, although of course the troughing and the cresting are essentially caused by the lift being less or greater than is required for steady flight. If the model is stable the phugoid path becomes a straight line after a few undulations, and since the model finally chooses such a path we would suggest that it is because it offers least resistance.

With regard to the subject of propellers, the draught from a propeller used as a fan affords, as we pointed out in our recent article on testing propellers, a field of investigation that would seem to be particularly suited to a static thrust testing plant, such as has, for instance, been installed by Mr. J. A. Mays at the South-Western Polytechnic. We regard the investigation of the fan slip as a subject well worthy of careful experiment; it is for that reason we have advocated that makers of propellers should submit their screws to be tested.

A descriptive article on the Dunne aeroplane appears this week. —ED.]

## "HOW AN AEROPLANE LIFTS."

[574] Referring to the article on "How an Aeroplane Lifts" in your issue of the 11th inst., I would like, with your permission, to pass a little criticism.

My chief concern is with Figs. 5 and 6, which give a splendid misrepresentation of facts. True it is that Newton's Laws form the "starting point" in all dynamical problems, but the "starting point" is their chief province.

The motion of air in the neighbourhood of a plane barrier is not quite so simply expressed as the reflection of light at a plane mirror. Figs. 5 and 6 are strongly reminiscent of an "Optics" primer.

The simple explanation of complex phenomena by *a priori* arguments is doubtless pleasant and attractive, but he who would believe in the diagrams mentioned as being at all representative is surely enjoying a "Fool's Paradise."

Is it not better to have a tincture of experimental fact? If Mr. Hickman will turn to the Proceedings of the Institution of Civil Engineers, 1903-4 and 1907-8, he will find an account of researches on wind pressure, &c., conducted at the National Physical Laboratory. The description is non-mathematical and in simple language. The author (Dr. Stanton) shows by curves the importance not only of the increase of pressure on the leading or windward side, but also of the reduction of pressure on the leeward side. Reverting once more to Fig. 6, it might be as well to point out that "lift" does not equal reaction, as shown, but the vertical component thereof. I hope, in the interests of your readers, that you will be able to find space for this note.

H. S. ROWELL.

[We appreciate criticism that is intended to be helpful, and accept our correspondent's remarks in that spirit. Possibly the fact that he was judging a half-finished article may have militated against leniency towards a method of explanation that has admittedly many shortcomings, but was, nevertheless, thought to be useful to those for whom the article was written.

It is not our sole purpose, in the conduct of FLIGHT, to inform those who are already advanced in the science; we try also to help newcomers to begin to get a grasp of the subject. The article in question was intended to offer to the uninitiated a fundamental explanation of the basic principle of how an aeroplane can lift at all, merely as the result of flying almost edge on through such a medium as air. Newton's laws of motion constitute this basic starting point, and it is instructive to see where they lead. The diagrams condemned by our correspondent were not intended to represent the actual conditions, but merely to illustrate a principle. We can thoroughly endorse our correspondent's recommendation of Dr. Stanton's researches on wind pressure; they constitute the standard data on this subject at the present time.—ED.]

## SINGLE SURFACED PLANE.

[575] Replying to Letter No. 490, the ribs of single-surfaced planes should undoubtedly be placed on the *under* side, the upper side being made as smooth as possible. The reason for this is that it is much easier to form a surface of discontinuity on the upper than on the lower surface of a moving inclined plane. The upper surface region is a region of reduced pressure, and the air-stream which normally follows that surface is very easily deflected by an obstacle, forming dead water. The air following the lower surface must follow it pretty closely, even if it be rough, as, short of going through the plane, the air has no other path. In water, "cavitation," which occurs at the back of the blade, is greatly assisted by any irregularity of the surface. The upper surfaces of natural wings are usually the smoothest.

Surbiton.

"OCTAVIUS."



